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Application No. <u>09601319</u>	Prepared by <u>CA</u>	Tracking Number <u>0600 7972</u>	
Examiner-GAU <u>Donovan -2832</u>	Date _____	Week Date <u>9/6/04</u>	
	No. of queries _____		

JACKET			
a. Serial No.	f. Foreign Priority	k. Print Claim(s)	<u>(p)</u> PTO-1449
b. Applicant(s)	g. Disclaimer	l. Print Fig.	q. PTOL-85b
c. Continuing Data	h. Microfiche Appendix	m. Searched Column	r. Abstract
d. PCT	i. Title	n. PTO-270/328	s. Sheets/Figs
e. Domestic Priority	j. Claims Allowed	o. PTO-892	t. Other

SPECIFICATION	MESSAGE
a. Page Missing	<u>① PTO-1449: please initial / line through</u>
b. Text Continuity	<u>Citations dated 11-25-02 Copies provided to</u>
c. Holes through Data	<u>reference.</u>
d. Other Missing Text	<u>② Amendment: Insert B.1) appears to be</u>
e. Illegible Text	<u>inserted for Claim 2 instead of Claim</u>
f. Duplicate Text	<u>1. please resolve.</u>
g. Brief Description	
h. Sequence Listing	
i. Appendix	
j. Amendments	
k. Other	
CLAIMS	
a. Claim(s) Missing	
b. Improper Dependency	<u>Thank You</u>
c. Duplicate Numbers	
d. Incorrect Numbering	initials <u>CA</u>
e. Index Disagrees	RESPONSE
f. Punctuation	
<u>(g)</u> Amendments	
h. Bracketing	
i. Missing Text	
j. Duplicate Text	
k. Other	
	initials _____

IN THE CLAIMS:

Please amend claims 1, 3, 8 and 10 as follows. Claims 1, 3, 8 and 10 are presented below in their amended form. The amendments to the above-noted claims are outlined in an Attachment to the Amendment using the conventional indication method of bracketing and underlining.

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B12
#3

1. (Amended) An electromagnetic actuator having a coil on which current is applied, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is applied and a vibration plate that vibrates by magnetic action when a low-frequency current is applied, with the coil positioned within the magnetic gap and the coil, the magnet, the magnet yoke, the diaphragm, and the vibration plate are accommodated in a basket, in which the magnet is radially arrayed and positioned with its north and south poles parallel to the diaphragm and the vibration plate.

A4

3. (Amended) An electromagnetic actuator as described in claim 1 or 2 above, in which a cover of the basket is used as magnetic shielding.

A5

8. (Amended) An electromagnetic actuator having a coil on which current is applied, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is applied and a vibration plate that vibrates by magnetic action when a low-frequency current is applied with the coil positioned within the magnetic gap and the coil, the magnet, the magnet yoke, the diaphragm, and the vibration plate are accommodated in a basket, in which the vibration plate, is supported within the basket by an elastic piece that presses against the surface of an outer rim of the vibration plate.

A6

10. (Amended) An electromagnetic actuator having a coil on which current is applied, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a



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Docket No. 0675-0030

#17
Andy B
J. White
G. R. DL

In re Patent Application of)
Tsuneo KYOUNO et al.)
Serial No. 09/601,319)
Filed: October 23, 2000)
For: ELECTROMAGNETIC)
ACTUATOR AND STRUCTURE)
FOR MOUNTING THE SAME)

Art Unit: 2832
Examiner: L. Donovan

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Washington, D.C. 20231, on 8/24/02

PRELIMINARY AMENDMENT

Honorable Commissioner of Patents
Washington, D.C. 20231

Sir:

In response to the Office Action dated February 21, 2002 please amend the
above-identified application as follows:

IN THE CLAIMS:

Please cancel claim 3 and amend claims 1 and 2 as follows:

1. (Twice Amended) An electromagnetic actuator having a coil on which
current is applied, a magnet that forms a magnetic circuit between its poles across a
magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a
high-frequency current is applied and a vibration plate that vibrates by magnetic action
when a low-frequency current is applied, with the coil positioned within the magnetic
gap and the coil, the magnet, the magnet yoke, the diaphragm, and the vibration plate
are accommodated in a basket in which the magnet is formed in a ring shape, and the
magnet is magnetized with a south pole located at one of an outer or inner periphery of
the ring shape magnet and a north pole located at the other of an inner or outer

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periphery of the ring shape magnet, and the ring shape magnet is radially arrayed and positioned with an axis of its north and south poles parallel to the diaphragm and the vibration plate.

2. (Amended) An electromagnetic actuator as described in claim 1 above, in which the magnet and the magnet yoke have two vibration plates and the two vibration plates are fixed inside the basket, and the magnet and the magnet yoke are supported by the two vibration plates in the basket, and the two vibration plates providing a double-suspension structure.



#20K
T. BELL
6-11-03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of) Art Unit: 2832
Tsuneo KYOUNO et al.) Examiner: L. Donovan
Serial No. 09/601,319)
Filed: October 23, 2000)
For: ELECTROMAGNETIC)
ACTUATOR AND STRUCTURE)
FOR MOUNTING THE SAME)

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Adelle M. Sturges

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated December 3, 2002, please amend above-identified application as follows:

IN THE CLAIMS:

Please amend claim 1 as follows:

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1. An electromagnetic actuator having a coil on which current is applied, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is applied and a vibration plate that vibrates by magnetic action when a low-frequency current is applied, with the coil positioned within the magnetic gap and the coil, the magnet, the magnet yoke, the diaphragm, and the vibration plate are accommodated in a basket in which the magnet is divided into at least two pieces and is formed in a ring shape, and the magnet yoke is assembled with a spacer between the magnet yoke and the magnet, and the magnet is magnetized with a south pole

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contd* located at one of an outer or inner periphery of the ring shape magnet and a north pole located at the other of an inner or outer periphery of the ring shape magnet, and the ring shape magnet is radially arrayed and positioned with an axis of its north and south poles parallel to the diaphragm and the vibration plate.

WHAT IS CLAIMED IS:

1. An electromagnetic actuator having a coil on which current is impressed, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is impressed and a vibration plate that vibrates by magnetic action when a low-frequency current is impressed, with the coil positioned within the magnetic gap and the parts thereof being accommodated in a basket, in which the magnet is radially arrayed and positioned with its north and south poles parallel to the diaphragm and the vibration plate.

2. An electromagnetic actuator as described in claim 1 above, in which there are two vibration plates with the magnet between them, the two vibration plates providing a double-suspension structure.

3. An electromagnetic actuator as described in claim 1 or 2 above, in which the cover of the basket is used as magnetic shielding.

4. An electromagnetic actuator having a coil on which current is impressed, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is impressed and a vibration plate that vibrates by magnetic action when a low-frequency current is impressed, with the coil positioned within the magnetic gap and the parts thereof being accommodated in a basket, in which the vibration plates are made of a stainless steel or alloy of copper and titanium that does not require an aging/hardening process after being formed.

5. An electromagnetic actuator having a coil on which current is impressed, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action

when a high-frequency current is impressed and a vibration plate that vibrates by magnetic action when a low-frequency current is impressed, with the coil positioned within the magnetic gap and the parts thereof being accommodated in a basket, in which the basket has a thin bottom plate that also serves as a vibration plate.

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6. An electromagnetic actuator as described in claim 5 above, in which the basket has a thin bottom plate with at least one lip that is concentric with the plate.

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7. An electromagnetic actuator as described in claim 5 or 6 above, in which the basket has a thin bottom plate formed of a material chosen from among polyethylene terephthalate (PET), polyethyl imide (PEI) or polyimide (PI).

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8. An electromagnetic actuator having a coil on which current is impressed, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is impressed and a vibration plate that vibrates by magnetic action when a low-frequency current is impressed, with the coil positioned within the magnetic gap and the parts thereof being accommodated in a basket, in which the vibration plate is supported within the basket by an elastic piece that presses against the surface of the outer rim of the vibration plate.

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9. An electromagnetic actuator as described in claim 8 above, in which the magnet yoke is supported by the vibration plate and the elastic piece has an inward protrusion that is positioned close to the outer edge of the magnet yoke.

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10. An electromagnetic actuator having a coil on which current is impressed, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is impressed and a vibration plate that vibrates by

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magnetic action when a low-frequency current is impressed, with the coil positioned within the magnetic gap and the parts thereof being accommodated in a basket, in which the coil is supported by a concentric projection that projects from the surface of the vibrating portion, and there is a diaphragm within the basket.

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11. An electromagnetic actuator having a coil on which current is impressed, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is impressed and a vibration plate that vibrates by magnetic action when a low-frequency current is impressed, with the coil positioned within the magnetic gap and the parts thereof being accommodated in a basket, in which the coil is supported by a concentric projection that projects from the diaphragm, and the coil and diaphragm are assembled in a single unit.

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12. An electromagnetic actuator having a coil on which current is impressed, a magnet that forms a magnetic circuit between its poles across a magnetic gap with a magnet yoke, a diaphragm that vibrates by magnetic action when a high-frequency current is impressed and a vibration plate that vibrates by magnetic action when a low-frequency current is impressed, with the coil positioned within the magnetic gap and the parts thereof being accommodated in a basket, in which the magnet is held in a magnet yoke and the magnet yoke holding the magnet is supported by the surface of the vibration plate, and the magnet, magnet yoke and vibration plate are assembled in a single unit.

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13. An electromagnetic actuator mounting structure for mounting an electromagnetic actuator inside portable electronic equipment in which elastic packing is sandwiched between the inner surface of the equipment case and the basket of the electromagnetic actuator and between the basket of the electromagnetic actuator and the electromagnetic actuator mounting substrate, so that the electromagnetic actuator is mounted inside the portable electronic equipment.

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PTO/SB/08A (08-00)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Application Number	09/601,319
				Filing Date	October 23, 2000
				First Named Inventor	Tsuneo KYOUNO et al.
				Group Art Unit	2832
				Examiner Name	L. Donovan
Sheet	1	of	1	Attorney Docket Number	0675-0030

U.S. PATENT DOCUMENTS						
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		Number	Kind Code ² (if known)			

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		Office ³	Number ⁴	Kind Code ⁵ (if known)				
		JP	09-070571			03/18/1997		Abstract
		JP	08-238901			09/17/1996		Abstract
		JP	09-027994			01/28/1997		Abstract
		JP	06-120866			04/28/1994		Abstract
		JP	08-179061			07/12/1996		Abstract

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
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		International Preliminary Examination Report dated May 2, 2000.	Full

Examiner Signature		Date Considered	
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